

WHAT IS CLAIMED IS:

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1. A zoom lens system comprising, in order from  
a more distant conjugate point for said zoom lens  
5 system, a first lens unit of a negative refractive  
power, a second lens unit of negative refractive power  
which moves during zooming, third, fourth and fifth  
lens units, wherein said zoom lens system further  
comprises at least one diffraction optical element.

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2. A zoom lens system according to claim 1,  
wherein said third lens unit has positive refractive  
power, said fourth lens unit has negative refractive  
15 power, and said fifth lens unit has positive refractive  
power.

3. A zoom lens system according to claim 1,  
further comprising a sixth lens unit, wherein said  
fifth lens unit moves during zooming.

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4. A zoom lens system according to claim 1,  
further comprising a sixth lens unit of positive  
refractive power.

25 5. A zoom lens system according to claim 1,  
further comprising a stop movable during zooming.

6. A zoom lens system according to claim 5,  
wherein said stop moves with said third lens unit.

7. A zoom lens system according to claim 5,  
5 wherein said diffraction optical element is located  
closer to a less distant conjugate point than said stop.

8. A zoom lens system according to claim 1,  
further comprising a stop between said third and forth  
lens units.

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9. A zoom lens system according to claim 8,  
wherein said stop moves with said third lens unit.

10. A zoom lens system according to claim 8,  
15 wherein said diffraction optical element is located  
closer to a less distant conjugate point than said stop.

11. A zoom lens system according to claim 1,  
wherein said diffraction optical element is located in  
20 said fifth lens unit.

12. A zoom lens system according to claim 1,  
wherein a conditional expression  $-0.50 < fw/fl < -0.01$  is  
satisfied where  $f1$  is a focal length of said first lens  
25 unit and  $fw$  is a focal length of an entire system of  
said zoom lens system at a wide-angle end.

13. A zoom lens system according to claim 1,  
wherein said fourth lens unit moves from the more  
distant conjugate point to a less distant conjugate  
point for said zoom lens system during zooming from a  
5 wide-angle end to a telephoto end.

14. A zoom lens system according to claim 1,  
wherein a conditional expression  $0.05 < d3W/d3T < 0.60$  is  
satisfied where  $d3W$  is a separation between said third  
10 and fourth lens units at a wide-angle end and  $d3T$  is a  
separation between said third and fourth lens units at  
a telephoto end.

15. A zoom lens system according to claim 1,  
15 wherein said second lens unit moves from the more  
distant conjugate point to a less distant conjugate  
point for said zoom lens system during zooming from a  
wide-angle end to a telephoto end.

20 16. A zoom lens system according to claim 1,  
wherein a conditional expression  $0.05 < |M2/M4| < 1.0$  is  
satisfied where  $M2$  is a moving amount of said second  
lens unit during zooming from a wide-angle end to a  
telephoto end, and  $M4$  is a moving amount of said fourth  
25 lens unit during zooming from the wide-angle end to the  
telephoto end.

17. A zoom lens system according to claim 1,  
wherein a conditional expression  $0.01 < |M3/M4| < 1.0$  is  
satisfied where M3 is a moving amount of said third  
lens unit during zooming from a wide-angle end to a  
5 telephoto end, and M4 is a moving amount of said fourth  
lens unit during zooming from the wide-angle end to the  
telephoto end.

18. A zoom lens system according to claim 1,  
10 wherein said lens units at both ends in said zoom lens  
system do not move during zooming from a wide-angle end  
to a telephoto end.

19. A zoom lens system according to claim 1,  
15 wherein said second lens unit includes one positive  
lens and one negative lens.

20. A zoom lens system according to claim 1,  
wherein said second lens unit includes one negative  
20 lens.

21. A zoom lens system according to claim 1,  
wherein said third lens unit includes one positive lens.

22. A zoom lens system according to claim 1,  
25 wherein said fourth lens unit includes one negative  
lens.

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23. A zoom lens system according to claim 1,  
wherein said first lens unit has three lenses including,  
in order from the more distant conjugate point, a  
5 positive lens, a negative lens and a negative lens.

24. A zoom lens system according to claim 1,  
wherein said first lens unit has three lenses including,  
in order from the more distant conjugate point, a  
10 positive lens, a positive lens and a negative lens.

25. A zoom lens system according to claim 1,  
wherein said diffraction optical element includes one  
diffraction grating.  
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26. A zoom lens system according to claim 1,  
wherein said diffraction optical element is made of  
stacked layers of diffraction gratings.

20 27. A zoom lens system according to claim 1,  
wherein said diffraction optical element is formed by  
combining two diffraction gratings having the same  
grating thickness and facing each other so as to make  
flat a surface of said diffraction optical element.

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28. A zoom lens system according to claim 1,  
wherein said diffraction optical element is formed by

combining a plurality of diffraction gratings with each other.

29. A zoom lens system according to claim 1,  
5 wherein said diffraction optical element is formed by combining a plurality of diffraction gratings facing each other via air.

30. An image-projecting device comprising a zoom  
10 lens system that comprises, in order from a more distant conjugate point, a first lens unit of a negative refractive power, a second lens unit of negative refractive power which moves during zooming,  
15 third, fourth and fifth lens units, wherein said zoom lens system further comprises at least one diffraction optical element, wherein said image-projecting device projects an original image to a subject surface, said original image being located at a less distant conjugate position for said zoom lens system.

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31. An image-projecting device according to claim 30, wherein said original image is formed by a liquid crystal panel.

25 32. An image pick-up device comprising a zoom lens system that comprises, in order from a more distant conjugate point, a first lens unit of a

negative refractive power, a second lens unit of  
negative refractive power which moves during zooming,  
third, fourth and fifth lens units, wherein said zoom  
lens system further comprises at least one diffraction  
5 optical element, wherein said image pick-up device uses  
said zoom lens system to project an image of an object  
onto a photosensitive body located at a less distant  
conjugate position for said zoom lens system.

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